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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------------------|------------------|
| 10/616,548 | 07/10/2003 | Leo Baldwin | ESI-144-B | 2806 |
| 7590 Thomas E. Bejin YOUNG & BASILE, PC Suite 624 3001 West Big Beaver Road Troy, MI 48084 | | | EXAMINER STAFIRA, MICHAEL PATRICK | |
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| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 03/14/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|---------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/616,548 | Applicant(s) BALDWIN ET AL. | |
| | Examiner Michael P. Stafira | Art Unit 2886 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Dana (2002/0080357).

Claim 1

Dana (2002/0080357) discloses determining a nominal illumination angle (Bidirectional reflectance distribution function) for the object (Para. 0041); positioning a light source (Fig. 1, Ref. 20, 70) at an angle complimentary to the nominal illumination angle of the object (Fig. 1, Ref. 14; Para. 0053); illuminating the object (Fig. 1, Ref. 60) using the light source (Fig. 1, Ref. 20).

Claim 2

Dana (2002/0080357) further discloses the nominal illumination angle is empirically determined (Para. 0059).

Claim 3

Dana (2002/0080357) further discloses the nominal illumination angle is mathematically

Art Unit: 2886

determined (Para. 0059).

Claim 4

The reference of Dana (2002/0080357) A1 further discloses the light source is positioned to subtend less than the entire object (Para. 0036).

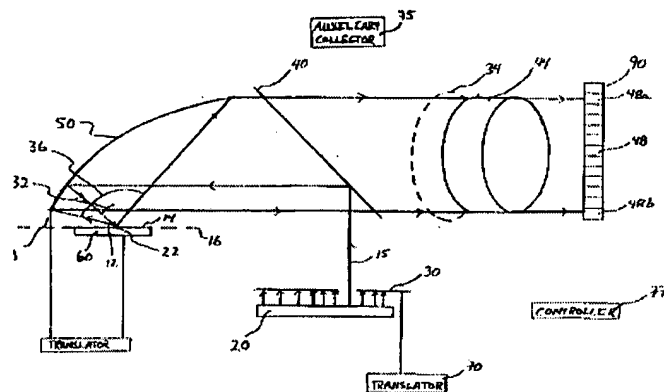


Fig. 1

3. Claims 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al. ('985).

Claim 5

Takagi et al. ('985) discloses a plurality of discrete light sources (Fig. 12, Ref. 51, 52, 53, 54) arranged in two dimensions and positioned at an angle complementary to the nominal illumination angle (Col. 4, lines 1-31). It is further the position of the examiner that every object illuminated has a nontrivial bi-directional reflectance distribution function and that the reference of Takagi et al. ('985) positions the light sources (Fig. 12, Ref. 51-54) at that nominal illumination angle so as to receive accurate detection signals, therefore Takagi et al. ('985) reads on the claimed invention.

FIG. 12

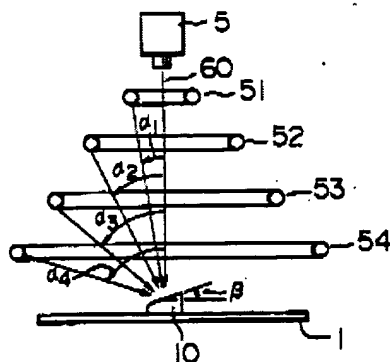


FIG. 11

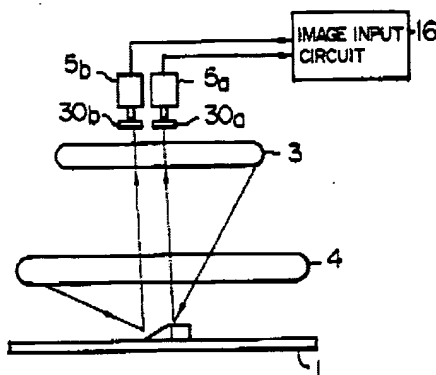
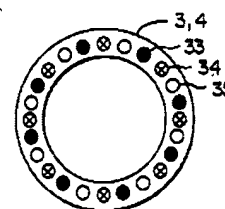


FIG. 10

**Claim 6**

Takagi et al. ('985) further discloses the discrete light sources are LEDs (Page 8, lines 38-46).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al. ('985) in view of Luk (2002/0181231).

Claim 7

Takagi et al. ('985) substantially teaches the claimed invention except that it does not show LEDs mounted to a circuit board in the shape of a cone. Luk (2002/0181231) shows that it is known to provide a circuit board with LEDs in the shape of a cone (Page 12, Para.0162) for an

Art Unit: 2886

optical illumination device. It would have been obvious to combine the device of Takagi et al. ('985) with the cone shaped LEDs of Luk (2002/0181231) for the purpose of providing a illumination device that covers multiple illuminations angles, therefore providing proper illumination of different size objects which increases the accuracy of the measurements.

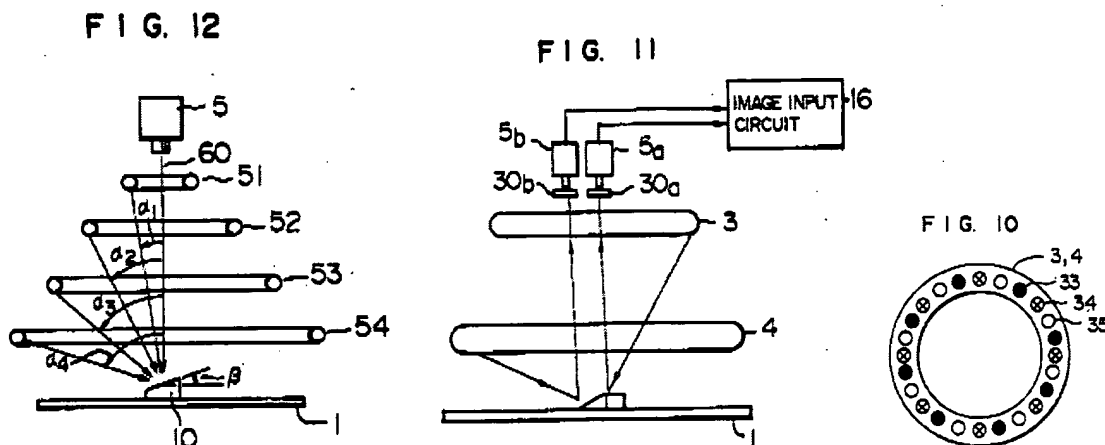
Claim 8

Takagi et al. ('985) substantially teaches the claimed invention except that it does not show LEDs mounted to at least two rigid circuit boards. Luk (2002/0181231) shows that it is known to provide LEDs mounted to two rigid circuit boards (Page 16, Para. 0183) for an optical illumination device. It would have been obvious to combine the device of Takagi et al. ('985) with the LEDs mounted on circuit boards of Luk (2002/0181231) for the purpose of providing a secure and stable platform for mounting LEDs, which decreases the amount of maintenance needed in operating the LEDs.

6. Claims 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al. ('985).

Claim 9

Takagi et al. ('985) discloses a two-dimensional light sources (Fig. 12, Ref. 51, 52, 53, 54) positioned at an angle complementary to the nominal illumination angle (Col. 4, lines 1-31). It is further the position of the examiner that every object illuminated has a nontrivial bi-directional reflectance distribution function and that the reference of Takagi et al. ('985) positions the light sources (Fig. 12, Ref. 51-54) at that nominal illumination angle so as to receive accurate detection signals, therefore Takagi et al. ('985) reads on the claimed invention.



Claim 10

Takagi et al. ('985) discloses the light source is a two dimensional collection of LEDs (Page 8, lines 38-46).

7. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al. ('985) in view of Luk (2002/0181231).

Claim 11

Takagi et al. ('985) substantially teaches the claimed invention except that it does not show LEDs mounted to a circuit board in the shape of a cone. Luk (2002/0181231) shows that it is known to provide a circuit board with LEDs in the shape of a cone (Page 12, Para.0162) for an optical illumination device. It would have been obvious to combine the device of Takagi et al. ('985) with the cone shaped LEDs of Luk (2002/0181231) for the purpose of providing a illumination device that covers multiple illuminations angles, therefore providing proper illumination of different size objects which increases the accuracy of the measurements.

Art Unit: 2886

8. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dana (2002/0080357).

Claim 12

Dana (2002/0080357) in view of discloses the claimed invention except for positioning lens arrangement along a line perpendicular to the surface of the object. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Dana (2002/0080357) with lens arrangement since it was well known in the art that using a lens arrangement directs the input light beam to the detector which decreases the amount of light loss to the detector.

9. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al. ('985) in view of Luk (2002/0181231).

Claim 13

Takagi et al. ('985) substantially teaches the claimed invention except that it does not show the light sources are positioned about a line perpendicular to a surface of the object and a lens arrangement is located symmetrically about the line side of the light sources. Luk (2002/0181231) shows that it is known to provide a plurality of light source perpendicular to a surface of the object with a lens about the line side of the light sources (See Figure 9) for an optical illumination system. It would have been obvious to combine the device of Takagi et al. ('985) with the illumination arrangement of Luk (2002/0181231) for the purpose of providing a illumination device that covers multiple illuminations angles, therefore providing proper illumination of different size objects which increases the accuracy of the measurements.

Art Unit: 2886

10. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al. ('985).

Claim 14

Takagi et al. ('985) in view of discloses the claimed invention except for positioning lens arrangement along a line perpendicular to the surface of the object. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Takagi et al. ('985) with lens arrangement since it was well known in the art that using a lens arrangement directs the input light beam to the detector which decreases the amount of light loss to the detector.

11. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dana (2002/0080357).

Claim 15

Dana (2002/0080357) discloses positioning the light source at angle complementary to the nominal illumination angle of the object (Para. 0053).

Dana (2002/0080357) discloses the claimed invention except for using a plurality of light devices. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Dana (2002/0080357) with the plurality of light devices since it was well known in the art that using a plurality of light devices increases the illumination coverage of the lighting device therefore increasing the sensitivity of the measurement.

Art Unit: 2886

12. Claims 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Dana (2002/0080357).

Claim 16

Dana (2002/0080357) further discloses measuring an angle from a plane normal to the object (Para. 0045).

Response to Arguments

13. Applicant's arguments filed December 26, 2006 have been fully considered but they are not persuasive.

In the remarks applicant takes the position for claim 1 that the reference of Dana (2002/0080357) fails to disclose determining a nominal illumination angle etc... in pages 5-6.

The examiner takes the position that the applicant fails to disclose in detail how the nominal illumination angle is calculated or derived. The only place in the specification that really defines the limitation is in paragraph [0021] wherein it only says "a nominal illumination angle is defined as the angle of illumination, measured from a plane normal to the object in the illustrated embodiments, which most effectively illuminates the object under consideration".

First, this limitation clearly fails to show how the nominal illumination angle is determined such as from the comparing of two measurements or the average of many measurements. Second, the specification fails to disclose how one would determine this magical angle. From the examiner's determination of the specification the nominal illumination angle can be anywhere from 0 degree's to 180 degree's. Fore instant, for one object the nominal angle could be 0 degree's and for another it's 180 degree's. It's the examiner's position that the reference of Dana

Art Unit: 2886

(2002/0080357) clearly shows a light source 20 that produces a light beam reflected from element 50, which produces a reflected light beam plane angle to the surface of the object 60. Therefore, in light of applicant's specification the angle of illumination of Dana (2002/0080357) and the calculation of angular variations of the radiation emitted from the object is considered the nominal illumination angle. It is therefore the examiner's position that the angle of illumination of Dana (2002/0080357) is the complementary to the nominal illumination angle of the object as defined by the specification. The reference of Dana (2002/0080357) again discloses that a transition stage may move the source aperture with or without the source so to alter the location on the reflector, which moves the light beam at different angles for measurement. Applicant's specification is silent to what or how it positions its light source on the basis of the nominal illumination angle. Are the light sources positioned with a mechanical means or a mathematical number at the time of construction of the apparatus? Further, the claimed terminology "nominal illumination angle" is not known in the optical art and could not be found in the <http://www.photonics.com/dictHome.aspx> dictionary or in http://en.wikipedia.org/wiki/Main_Page, therefore the specification needs to further detail the terminology for one to clearly understand the invention which it fails to do in the current application. With all these details silent in applicant's specification it is the examiner's position that the reference of Dana (2002/0080357) reads on the claimed limitations and including the dependent limitations 2-4, 16.

With regards to claim 12, applicant takes the position that is not well known to use detecting lens in an optical measuring apparatus.

Art Unit: 2886

Examiner takes the position that the reference of Dana (2002/0080357) discloses an optical lens in Figure 4-5 that is used on the detection side of the apparatus. Other prior art cited in this application further discloses the use of a detecting lens and since applicant fails to disclose that the detecting lens produces an unexpected result in the specification it would have been well known in the art.

With regards to claim 15, applicant takes the position that Dana (2002/0080357) fails to disclose positioning each of the plurality of discrete light devices at the angle complementary to the nominal illumination angle.

It is the examiner's position that many of the prior art cited in the current application show the use of multiple light sources all positioned at angles to produce the best nominal illumination angle.

With regards to claims 5-6, applicant takes the position that the reference of Takagi et al. ('985) fails to disclose a plurality of discrete light source arranged in two dimensions and positioned at an angle complementary to the nominal illumination angle.

The examiner takes the position that figure 10 of Takagi et al. ('985) shows a ring of a plurality of LEDs in a two-dimensional arrangement and that ring shown in figure 12 ref. 54 is positioned to project light at the object at an nominal illumination angle. Since applicant specification fails to disclose the optimum nominal illumination angle it is assumed that the light ring 54 in figure 12 is positioned in the nominal illumination angle and therefore reads on the claimed limitations. Further, applicant in the remarks state "the plurality would not be arranged an angle complementary to the nominal illumination angle, which can only be one angle by

Art Unit: 2886

definition". Examiner cannot find in the specification where it defines the nominal illumination angle as being one angle?

In response to claims 7-8, 13 applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been knowledge generally available to one ordinary skill in the art to use the Luk (2002/0181231) since the combination was to show that there are different types of illumination device with different configurations and not a illumination device for measurements.

With regards to claims 9, 11, 14 applicant takes the position that the reference of Takagi et al. ('985) fails to disclose a two dimensional light source positioned at an angle complementary to a nominal illumination angle.

The examiner takes the position that figure 10 of Takagi et al. ('985) shows a ring of a plurality of LEDs in a two-dimensional arrangement and that ring show in figure 12 ref. 54 is positioned to project light at the object at an nominal illumination angle. Since applicant specification fails to disclose the optimum nominal illumination angle it is assumed that the light ring 54 in figure 12 is positioned in the nominal illumination angle and therefore reads on the claimed limitations.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

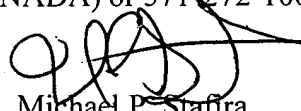
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Stafira whose telephone number is 571-272-2430. The examiner can normally be reached on 4/10 Schedule Mon.-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2886

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael P. Staffra
Primary Examiner
Art Unit 2886

March 5, 2007